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November 3, 1956

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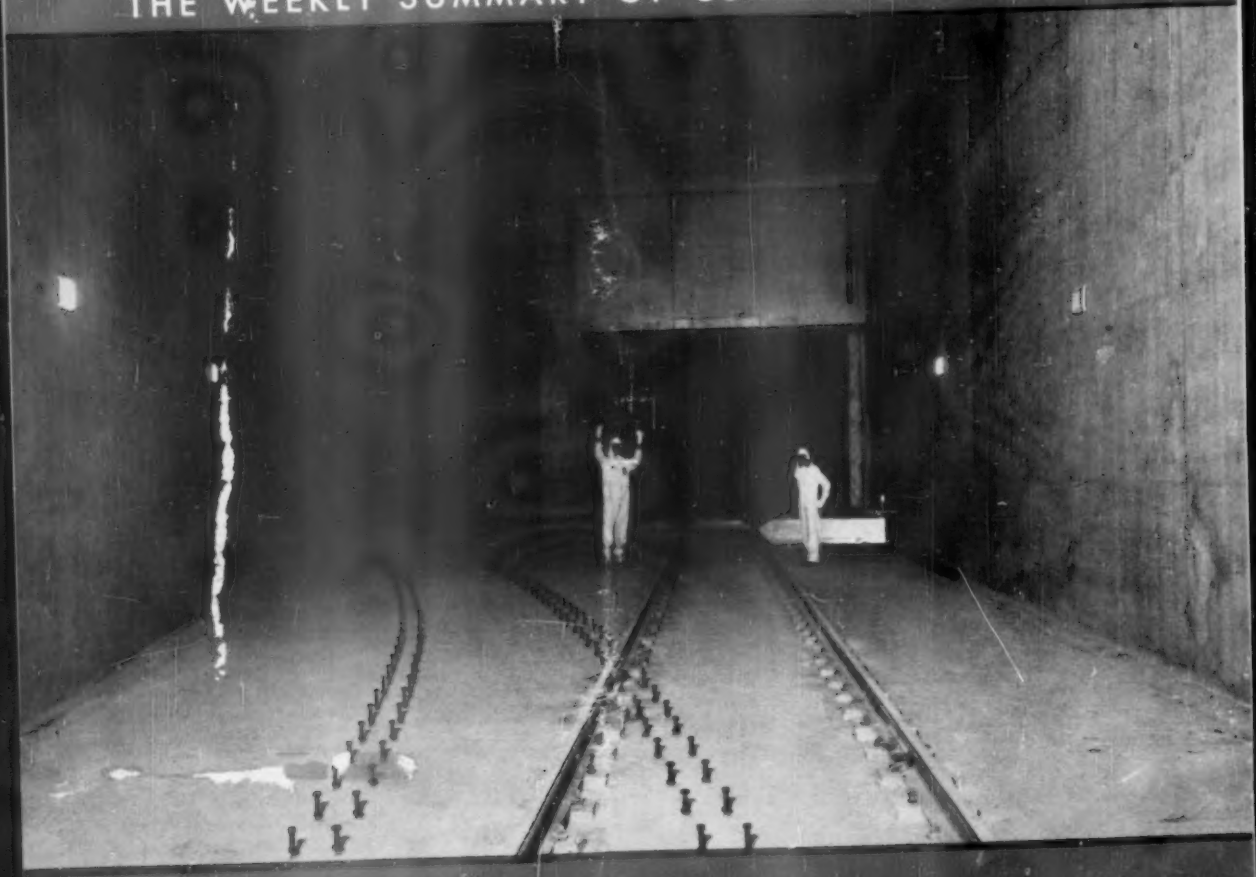
SCIENCE NEWS LETTER

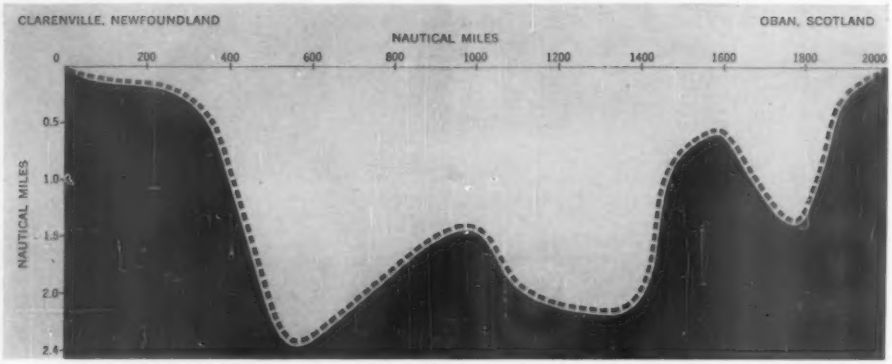
THE WEEKLY SUMMARY OF CURRENT SCIENCE



Atomic Vault

See Page 279

A SCIENCE SERVICE PUBLICATION



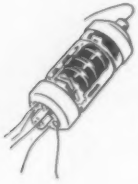
Contour of ocean bed where cable swiftly and clearly carries 36 conversations simultaneously. This is deep-sea part of system – a joint enterprise of the American Telephone and Telegraph Company, British Post Office and Canadian Overseas Telecommunications Corporation.

A great new telephone cable now links North America and Europe—the first trans-oceanic cable to carry voices.

To make possible this historic forward step in world communications, Bell Laboratories scientists and engineers had to solve formidable new problems never encountered with previous cables, which carry telegraph signals.

To transmit voices clearly demanded a much wider frequency band and efficient ways of overcoming huge attenuation losses over its more than 2000-mile span. The complex electronic apparatus must withstand the tremendous pressures and stresses encountered on the ocean floor, far beyond adjustment or servicing for years to come.

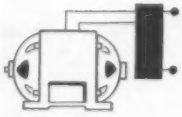
Here are a few of the key developments that made this unique achievement possible:



More than 300 electron tubes of unrivaled endurance operate continuously, energized by current sent from land.

Precisely designed equalizing networks and amplifiers compensate for the loss in the cable every 40 miles and produce a communication highway 144 kc. wide.

A unique triple watertight seal protects the amplifiers from pressures as high as 6500 pounds per square inch.



Power supplies of exceptional reliability send precisely regulated current along the same coaxial that carries your voice to energize the amplifying units.

BELL TELEPHONE LABORATORIES

World center of communications research and development

JOINT AWARDS—On either side of the statuette of the Winged Victory of Samothrace, similar to those to be presented Nov. 15, are Dr. Arnall Patz and Dr. V. Everett Kinsey, left, and Dr. Karl Meyer and Dr. Francis O. Schmitt, right.

MEDICINE

Lasker Awards Given

➤ THE POLIO VACCINE, a way to save babies from a new cause of blindness, the "excellent medical services" now brought to the nation's miners and their families, and 50 years of safeguarding the purity of American food and drugs are among the achievements recognized by the 1956 Albert Lasker Awards of the American Public Health Association.

Less dramatic, perhaps, but with equal impact on the nation's health both now and in the future are the achievements in public health statesmanship and in research on connective tissues and the rheumatic diseases honored by Lasker Awards this year.

The public health statesmen honored with individual awards are Dr. Alan Gregg, Big Sur, Calif., a special award of $2,500 presented only three times before, and Dr. William P. Shepard, second vice-president, Metropolitan Life Insurance Company, New York, $1,000. Both also get gold statuettes of the Winged Victory of Samothrace.

Dr. Jonas E. Salk of Pittsburgh gets an award of $1,000 and the statuette for the polio vaccine he developed.

The discovery that oxygen given to newborn babies, especially the small and premature ones, was blinding them through the eye disease, retrolental fibroplasia, and coordination of a national cooperative study confirming the discovery, won a joint award for Dr. Arnall Patz of Baltimore and Dr. V. Everett Kinsey of the Kresge Eye Institute, Detroit.

The award to Dr. Patz calls attention to the imagination and persistence he brought to the problem and the fact that, although a physician in private practice and against open discouragement by an authority on diseases of the eye, he found time to explore the subject, using at first only his own resources.

Dr. Karl Meyer, Columbia University College of Physicians and Surgeons, New York, and Dr. Francis O. Schmitt, Massachusetts Institute of Technology, Cambridge, Mass., share a joint award for their separate biochemical and physical studies of collagen and connective tissue giving new light on rheumatic diseases.

George P. Larrick, commissioner of Food and Drugs, will receive a group award for the U. S. Food and Drug Administration, recognizing a half century of public service in safeguarding the public.

A group award to the United Mine Workers of America Welfare and Retirement Fund will be received by Dr. Warren F. Draper, executive medical officer of the fund.

Science News Letter, November 3, 1956

PHYSICS

Scientific Heirloom Arrives at Smithsonian

➤ ONE OF THE first X-ray tubes used by the discoverer of X-rays is now in the United States for exhibition at the Smithsonian Institution.

The tube was the third constructed by Wilhelm Konrad Roentgen, who discovered X-rays on Nov. 8, 1895. His first two tubes are at the Physical Institute in Wurzburg, Germany, and at the Deutsches Museum, Munich.

The third tube was purchased from a private owner in Germany and given to the Smithsonian Institution by General Electric Company's X-ray department in Milwaukee, Wis.

The scientific heirloom will be exhibited in the Smithsonian's Gallery of Medical History, Arts and Industries Building.

Science News Letter, October 6, 1956

LASKER WINNERS — Recognized this year for their achievements in the field of health are the United Mine Workers of America's medical program, the award to be accepted by Dr. Warren F. Draper; Dr. Jonas Salk; Dr. Alan Gregg; Dr. William P. Shepard, and the Food and Drug Administration of the U. S. Department of Health, Education and Welfare, the award to be accepted by George P. Larrick, commissioner, all shown in the usual order.

VIROLOGY

New Family of Viruses

➤ SIGNS that "a whole new family of virus-like agents" lurks in the human blood stream were reported by Dr. I. William McLean Jr. of Parke, Davis and Company, Detroit, at an International Symposium on Hepatitis held at the Henry Ford Hospital, Detroit.

Members of this family possibly cause hepatitis and other diseases. Hepatitis is a liver infection best known to the layman as jaundice because of the yellow skin that is one symptom.

It has become widespread in recent years and is said to be second only to measles among the most prevalent reportable virus-caused diseases.

Infectious hepatitis, called Virus A, is a contagious, epidemic disease transmitted through contaminated drinking water, food and sewage. It has an average mortality rate of 0.2%.

A second type, called Virus B or serum hepatitis, has a death rate as high as 20% and is transmitted through improperly sterilized needles or other surgical equipment and through administration of blood or serum containing the virus. Since no no effective measures have been set up to test human blood for the hepatitis virus, blood from carriers may be used unknowingly in transfusions.

Dr. McLean and associates have been trying to isolate Virus A. They have been able to produce degenerative changes in an especially maintained culture of human bone narrow cells by adding to the cells normal human blood serum or blood serum from hepatitis patients.

These changes are produced by about 25% of specimens from normal people but almost 100% of infectious hepatitis victims seem to carry the agent in their blood and intestinal wastes.

Whether the effect is due to the hepatitis virus or to any virus has still not been positively determined, but the evidence that the changes are due to a virus is "strongly suggestive," Dr. McLean said.

The technique developed in the study, he added, might apply to other degenerative diseases still the object of intensive research and could be a preliminary step toward a hepatitis test and vaccine.

Science News Letter, November 3, 1956

GEOPHYSICS

Launch 40 Rockoons

➤ ABOUT 40 ROCKOONS will be launched from an ice-breaker near Antarctica during the International Geophysical Year (IGY), Dr. Harry Wexler of the U. S. Weather Bureau, Washington, has reported.

Rockoons are balloon-borne rockets fired about 15 miles above the earth's surface to zoom to 60 miles in the atmosphere. Dr. Wexler, chief scientist of the IGY Antarctic program, said the rockoons will be used to observe cosmic ray intensity, the air glow caused by aurora, and electrical currents in the atmosphere.

The launchings, he said, will be coordinated with similar firings being made in the Northern Hemisphere. Dr. Wexler reported the plans at a week-long IGY Antarctic orientation program held at the Seabee base, Davisville, R. I.

Some 70 scientists who will man the U. S. stations on the White Continent during the IGY were together there for probably the only time in one group.

The briefings allowed the scientists, all of whom will be working and living at isolated snow-bound stations, to get acquainted with each other and to learn of the conditions under which they will be living for the next 18 months. Most of those scheduled to sail to Antarctica during the next two months will return after 18 months of duty, to be replaced by a second contingent of scientists who will sail next fall.

The stations they will man are Little America, Byrd, Pole, Weddell, Knox and Adare.

The United States has been given the responsibility of running the IGY Antarctic Weather Central for the 11 other nations also establishing bases there. Weather observations will be collected and re-broadcast internationally.

The International Geophysical Year is a world-wide probe of the earth and its atmosphere scheduled to start next July 1.

Science News Letter, November 3, 1956

MARINE BIOLOGY

Electronic Fish Counter Spots Salmon in Alaska

➤ AN ELECTRONIC FISH COUNTER, the first of its kind, has been installed at Egegik Weir in a river flowing into Bristol Bay near King Salmon, Alaska, by fish biologists of the U. S. Fish and Wildlife Service.

It is the first electronic fish counter to be used in the field. Other attempts have been made under laboratory conditions.

"The electronic counts are being checked against visual counts. The fish detector to date has proved to be 98% accurate," biologist Harry Rietze of the U. S. Fish and Wildlife Service, who heads the project, reported. "The only 'joker' is that when two fish go through at the same time, there is no way of telling there are two fish."

The fish detector is operated on the principle of a "resistant bridge." Since a fish has less electrical resistance than water, thus carrying the current better than water, it gives a signal on a wheatstone bridge circuit. This is amplified and recorded on a paper chart.

The first model of the detector was designed and built by biologist Charles Voltz of the U. S. Fish and Wildlife Service electronics laboratory in Seattle, Wash.

Egegik Weir was the location chosen for the experiment because there are large runs of fish about the same size and same kind. As yet, no mechanical method has been developed to tell the kinds and sizes of fish.

Science News Letter, November 3, 1956

SCIENCE NEWS LETTER

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ASTRONOMY

Astronomical High Lights

Top events in astronomy during 1956 selected by Dr. Harlow Shapley include completion of long study on speeds of very distant galaxies made with 200-inch telescope.

➤ LAUNCHING ARTIFICIAL SATELLITES and radio signals from the planets and space held greatest public interest in astronomy during 1956, Dr. Harlow Shapley, retired director of Harvard College Observatory, has reported.

However, in listing the past year's astronomical high lights, Dr. Shapley put at the top measurements made on very far distant galaxies with the giant 200-inch telescope on Mount Palomar.

Knowledge of rate at which the universe is expanding, he said, will for many years to come be based on results of the now-completed "prolonged study" by Dr. Milton L. Humason of Mount Wilson and Palomar Observatories of the radial velocities of several hundred galaxies. This work was reported jointly with Drs. Allan R. Sandage, also of Palomar, and N. U. Mavall of Lick Observatory, Mount Hamilton, Calif.

Dr. Shapley told the American Association of Variable Star Observers meeting in Springfield, Mass., that discovery of the anti-proton was second on his list of 11 astronomical highlights for 1956.

He said this discovery gives to cosmogony a basis for "strange speculations" such as the theory suggested by Dr. Maurice Goldhaber of Brookhaven National Laboratory, Upton, N. Y., of an anti-matter universe quite distant from our proton cosmos—a sort of mirror image of it.

Third highlight of 1956 astronomy, Dr. Shapley said, was the beginning of the world-wide organization of amateur astronomers for the visual tracking of the artificial satellite, the launching and study of which is one of the "semi-astronomical" projects of the International Geophysical Year. IGY is an international look at the earth and its atmosphere lasting 18 months from next July 1.

Fourth on Dr. Shapley's list is the "firm assurance" that a large national observatory with an 80-inch telescope equipped for precise photometry will be built in the Southwest for use by astronomers from many institutions. This project, underwritten by the National Science Foundation, is a companion enterprise to establishment of the 140-foot radio telescope in West Virginia.

A "convincing astrophysical theory" by Dr. W. A. Fowler of California Institute of Technology, Pasadena, Calif., and Dr. Jesse L. Greenstein of Mount Wilson and Palomar Observatories to account for formation of heavy elements in stellar interiors is fifth on Dr. Shapley's list. He said this contribution was of "high importance" in our rapidly increasing knowledge concerning evolution of stars and of the stellar universe.

Here are the other high lights:

6. The publication of the University of Michigan's great program of discovery and measurement of visual double stars seen from the Southern Hemisphere. Dr. R. A. Rossiter was the principal observer for this 30-year enterprise. He discovered more than 5,500 new double stars, more than any other astronomer, setting a record unlikely to be exceeded.

7. Detection for the first time of red shifts in the radio spectrum of distant galaxies by Drs. A. E. Lilley and E. F. McLain of the Naval Research Laboratory, Washington. They found the speed of recession of a pair of galaxies in Cygnus the same in the radio wavelengths as in optical measures by Drs. W. Baade and R. Minkowski of Mount Wilson and Palomar Observatories—about 10,000 miles per second.

8. Two special conferences of high importance. One held at the Leander McCormick Observatory, Charlottesville, Va., to pool the continued worries of astronomers about the stellar distance scale and its revision. The other held at the Flower and Cook Observatory near Philadelphia to explore, with international participation, the future of precision instruments for measuring faint starlight.

9. The dedication and putting into successful operation, under the general supervision of Dr. Bart J. Bok, of the 60-foot radio telescope at Harvard Observatory's George R. Agassiz Station, an instrument designed especially for research on the neutral hydrogen radiation from the Milky Way galaxy.

10. The dominance in the summer and autumn sky of the planet Mars, which was in early September a mere 35,000,000 miles distant, permitting much intense study by spectrograph, photometer and radio waves of the planet's surface at this most favorable approach in many years.

11. The announcement from the Canadian Radio Physics Laboratory at Shirley Bay of Project Janet, a development by Dr. P. A. Forsyth and co-workers for using the ionized trains of meteors for the transmission of radio messages over long distances, at least up to 1,000 miles.

Science News Letter, November 3, 1956

Scab is a major disease problem in New York *apple* orchards.

Use of *molasses* as livestock feed is increasing.

"MEMORY" TUBE — Franklin H. Harris of the Naval Research Laboratory inspects the tube he invented that can take a TV picture, transfer it to a monitor tube and hold it there for as long as a day to study.

BIOCHEMISTRY

Tranquilizer Halts Reproductive Cycle

➤ RESERPINE, one of the now widely used tranquilizing drugs, can temporarily halt the monthly reproductive cycle in females if used in large enough daily doses.

Birth control by this drug, however, will probably not be possible because of the size of the dose needed to achieve the effect.

The finding, made in monkeys, is reported by Dr. Vincent J. De Feo of the Carnegie Institution of Washington, Baltimore laboratory, and Dr. S. R. M. Reynolds of the University of Illinois College of Medicine, Chicago, in *Science* (Oct. 19).

When the drug was given to female monkeys early in the monthly cycle, menstruation was suppressed for as long as 140 days.

Operations on some monkeys at the end of the reserpine treatment showed that no eggs had been released during the treatment period. Consequently, the treatment, in the monkeys, would have given effective birth control. Three of the monkeys had been pregnant before the experiments, so it was known that they were able to produce young.

After the drug was stopped, normal monthly cycles promptly started again.

The amount of drug given is so much greater than the amount that can be given humans without causing tremors and other undesirable symptoms the scientists do not see it as a practical means of birth control.

They do, however, suggest that doctors giving the drug to women of childbearing ages should look into the matter of how it is affecting the patients' monthly cycles.

Science News Letter, November 3, 1956

PHYSICS

France Not an A-Power

Although many atomic research pioneers were French, interruption of scientific training by World War II and lack of uranium isotope separators plague France's atomic effort.

By HOWARD SIMONS *from Paris*

➤ FRANCE, whose early scientists pioneered in nuclear physics, is anything but an atomic power today.

While confusion about atomic bomb testing powers American political debate during election year oratory and England enters the industrial atomic era with a new electrical-atomic plant at Calder Hall, France, by necessity, remains an interested bystander.

Lack of properly trained manpower and no industrial plant for isotopic separation of uranium plague the French atomic effort.

The first shortage is a world-wide shortage, but perhaps more acute in France. During World War II, scientific training in France came to a screeching halt and has not yet fully recovered.

The second shortage is being overcome through the use of the U. S. atoms-for-peace offer under which France has already negotiated for 40 kilograms, or 88 pounds, of uranium 235, estimated to cover its present needs.

France's need for atomic energy is almost desperate. Resources are very short, In black and white for this year, almost 50% of the country's hydroelectric potential has been used, coal production is at its maximum, and the French production of oil and natural gas does not even begin to meet the needs.

Concentrating heavily on a fast, short-term atomic program designed to produce power, France expects to double the electrical capacity of its plants operating on atomic fuel every three or four years.

By 1975, the Commissariat a L'Energie Atomique, or C.E.A. the French equivalent of the U. S. Atomic Energy Commission, hopes to have France producing from between 15% and 35% of its total electrical output by means of atomic energy.

The French already have one reactor in operation, nicknamed G1, the "G" standing for graphite. It is a gas-cooled, natural uranium, graphite-moderated reactor. Two larger reactors, called G2 and G3, are being built. All three reactors are located in Marcoule in the south of France on the Rhone River. None are as big as the Calder Hall reactors.

G1 has been in operation since January, 1956, and is only a prototype of the larger reactors. When completed in 1958, G2 and G3, plutonium producers, will each be capable of producing 150,000 kilowatts of heat and between 25,000 and 35,000 kws net electricity.

The French are also building a fourth reactor, tabbed EDF1. Scheduled to go into operation in 1959, it will be located in the Loire River valley. This graphite reactor will be capable of producing between 60,000 and 70,000 kws of electricity.

The fourth reactor, EDF1, is being financed by the French electricity works, which expects to build a new power reactor in France every 18 months.

In addition to the reactors, France has set up an atomic research center at Saclay, southwest of Paris. It is at this center that the major share of French experimental and theoretical work in the field of nuclear studies is carried out.

At the present time, the French C.E.A. has a budget of $140,000,000.

France must and is relying heavily on international cooperation and the sharing of the atom.

Science News Letter, November 3, 1956

PLANT PATHOLOGY

Ill Snap Beans Cured By New Antibiotics

➤ SNAP BEANS are being cured with antibiotics. The latest U. S. Department of Agriculture report is that two new antibiotics, anisomycin and griseofulvin, protect healthy plants against the fungus diseases of powdery mildew. In larger concentration, they also cure infected plants.

Science News Letter, November 3, 1956

TECHNOLOGY

Army Midget Radar Portable as Small TV

➤ A MIDGET RADAR SET in the same class as portable TV sets has been developed for the Army.

Built by the Sperry Gyroscope Company, the portable radar is intended to move with mobile forces and watch the enemy despite smoke, darkness and fog. The set contained in a drum 14 inches high and 14 inches long is powered by a motor-generator that can be carried by one of a two-man team.

The whole outfit weighs 85 pounds compared with most Army radars of a ton or more.

Science News Letter, November 3, 1956

PORTABLE RADAR—The lightweight radar being operated here by Pvt. Thomas Hughes of Kearny, N. J., while Pfc. Thomas Yamada of Honolulu, T. H., plots the results, weighs only 85 pounds, compared to the ton or more of most Army radars. The midget radar set, built for the Army by Sperry Gyroscope Company, produces an audible signal when a man or object is within range instead of the usual visual signal, thus eliminating the cathode ray tube.

POLLUTION-CAUSED TUMOR — The tumorous growth on the mouse shown above was induced from a benzene extract of condensed gasoline engine exhaust in a study of injurious air pollutants carried out by biologists at Armour Research Foundation of Illinois Institute of Technology, Chicago. The extract was painted on the same area twice a week for eight months.

MEDICINE

Find Artery Disease Signs

➤ EARLY SIGNS of the most serious form of artery disease, atherosclerosis, have been found in all deceased persons more than three years old examined in seven widely separated parts of the world, Dr. Russell L. Holman of Louisiana State University, New Orleans, reported at the meeting of the Association of Life Insurance Medical Directors of America in New Orleans.

The aorta, big artery through which blood first leaves the heart for its trip around the body, is the first area involved, Dr. Holman found.

His findings came from examination of blood vessels of persons aged one to 40 years dying either from accident or natural causes in New Orleans, England, Spain, Puerto Rico, Costa Rica, South Africa and Guatemala.

The most striking increase in amount of atherosclerosis in the aorta came between the ages of eight and 18 and suggested a relationship of the beginning of this disease to the hormonal and glandular changes of puberty.

The usual sequence of events in atherosclerosis, he explained, is the fatty streak in the walls of the artery, followed by a fibrous plaque and then complications and disease. The early fatty streaks he found were followed by fibrous plaques about 20 years later. Only one out of five fatty streaks had become a pearly plaque by age 40.

A similar sequence of events, 20% of fatty streaks converted to fibrous plaques in 20 years, occurred in the coronary arteries, but about a decade later than in the aorta.

Of all population groups studied so far, the greatest difference in degree of atherosclerosis in the aorta was between the white and Negro races in the 11-to-15-year age group in the New Orleans area.

At age 13 there was roughly five times as much early disease sign in the aorta in the Negro race as in the white race. Dr. Holman and associates could find no environmental differences in the two races that could explain this.

His findings do not, he said, support the current idea that atherosclerosis begins as a passive filtration of fatty substances from the blood into the artery walls. Instead the findings point to active body metabolic processes under the control of local and general bodily factors as a more probable mechanism for the start of atherosclerosis.

Science News Letter, November 3, 1956

Scientists have found no effect on dark adaptation of *eyes* due to the ultraviolet light produced by fluorescent lamps.

Deep-frozen *shrimps* from India may soon be making an appearance on dining tables in the United States.

TECHNOLOGY

Radioactive Machinery Buried Underground

See Front Cover

➤ THE WORLD'S STRANGEST burial vault is an underground, 500-foot tunnel in which are entombed railroad cars loaded with discarded radioactively "hot" machinery from the Hanford (Wash.) plutonium plant, where much of America's atomic bomb material is manufactured.

Most contaminated radioactive equipment is taken out in the nearby desert and buried, but for the apparatus too heavy to handle easily, the new concrete tunnel was built as a long-time storage place by General Electric Company, which operates Hanford for the Atomic Energy Commission.

A large water-filled concrete door, shown open in the photograph on the cover of this week's SCIENCE NEWS LETTER, clangs shut after the dangerous atomic cargo is stowed away by workers in full protective clothing.

Science News Letter, November 3, 1956

PSYCHOLOGY

Infertility May Be Due to Emotional Disturbance

➤ INFERTILITY IN WOMEN often may be the result of a relatively serious emotional disturbance, a study by Dr. Betty Grover Eisner, University of California at Los Angeles psychologist, has suggested.

Twenty infertility patients with no discernible physiological cause for their infertility were selected, along with 20 women of comparable age and socio-economic status who had three or more children and had experienced no difficulty in becoming pregnant.

The male factor was presumably excluded by the use of donors where necessary.

All the women were administered Rorschach (ink blot) tests, a standard psychological technique for detecting emotional disturbances. A panel of experienced Rorschach judges then rated responses of the women.

There was a unanimous agreement among the judges that the infertile women were significantly more disturbed than the women with children. There was some disagreement over the quality of the disturbances, but twice as many infertility patients were adjudged to have schizophrenic-like or hysterical responses than fertile women.

Dr. Eisner said the study did not answer the question of whether the emotional disturbance was the cause of infertility or caused by infertility.

There was a strong suggestion, however, that emotional disturbances contributed to infertility. Further study is needed to verify this, she said.

Science News Letter, November 3, 1956

MEDICINE

More Insurance For Cancer Patients

➤ MORE CANCER PATIENTS are seeking life insurance and more are going to get it than in former years, it appears from a report of Dr. Eugene V. Higgins, medical director of the North American Reassurance Company, New York, at the meeting of the Association of Life Insurance Medical Directors of America in New Orleans.

Anyone with cancer or a history of having had cancer was automatically rejected for life insurance 40 years ago.

"We have progressed considerably from that iron curtain position," Dr. Higgins said.

Today medical examiners can and should, he said, consider the kind and location of the applicant's cancer, how it was treated and what the prognosis is for a particular kind of cancer.

A more hopeful prognosis is justified, he said, in cancer of the colon, rectum, prostate and uterus. Cancers of the lung, stomach, esophagus, ovary and soft tissues continue to present a more discouraging picture. These are conclusions from the Cancer in Connecticut study, the kind of study that gives insurance medical examiners the type of information they need.

Other information must be obtained from the applicant's physician. A favorable factor is the applicant's concern to keep in follow-up touch with his physician.

Science News Letter, November 3, 1956

PUBLIC HEALTH

Chemical Fallout Causes Air Pollution

➤ THE FALLOUT of chemicals thrown into the atmosphere by industrial plants, home furnaces, automobiles and other sources must be controlled.

The sooner growing communities take measures to limit air pollution, the less chance there is of such smog-caused disasters as those in Donora, Pa., in 1948, and in London in 1952.

Each year air pollution kills a large number of people, Dr. F. N. Frenkiel of the Applied Physics Laboratory, Silver Spring, Md., told a symposium on cleaner air for urban areas at the Franklin Institute, Philadelphia.

For the last two years, including September, Dr. Frenkiel said, "the concentration of ozone during smoggy days in the streets of Los Angeles County was often larger than the safe concentration levels recommended for the health of adult workmen in the factories."

Periodic outbursts of smog have also been reported in New York, Pittsburgh, Cincinnati and Detroit, he noted. Dr. Frenkiel predicted such outbursts would become more and more frequent, and more damaging, unless appropriate steps are taken to control or limit atmospheric pollution.

Mathematical methods, he reported, can be used to calculate probable pollution patterns and the relative contributions of each pollution source to the concentration at each location. They can also be used to determine the possible effects of control methods.

Los Angeles is a "case history of carelessness in guarding one of its finest assets—fresh air," Dr. A. J. Haagen-Smit charged. The California Institute of Technology biochemistry professor was the first to show that ozone, important in smog formation, can be made by photochemical reactions involving organic compounds and nitrogen dioxide.

Science News Letter, November 3, 1956

GEOPHYSICS

Data From Satellites Sent by Two Methods

➤ THE EARTH SATELLITES to be sent whizzing around the world during the International Geophysical Year will send the information they gather back to earth by two methods, Dr. John P. Hagen of the Naval Research Laboratory has reported.

The director of Project Vanguard, name given to the satellite program, told a meeting of the Philosophical Society of Washington that some vehicles will telemeter back information continuously, others will do so only on command. Frequency for the transmissions has been set at 108 megacycles.

The messages will be sent by a continuous tone broken up in pulses, the information being conveyed by changes in the pitch, the length of the pulses and the separation between the pulses. These three variables will give 18 channels, Dr. Hagen said.

Choice between continuous and demand telemetering will depend on the kind of experiments contained in the particular satellite. Some experiments will require making measurements all the time, others will not. Definite decision concerning instruments for each satellite will not be made for several months.

Certain to be included, probably in the first trial, Dr. Hagen said, would be measurements of air density at altitudes of 200 to 1,500 miles above the earth's surface, where the satellite is expected to circle.

Science News Letter, November 3, 1956

PUBLIC HEALTH

VA Hospital Volunteers Safe From TB Danger

➤ VETERANS ADMINISTRATION hospitals are a safe place for volunteers to work, so far as danger of getting tuberculosis goes.

Although tuberculosis afflicts about one out of every 1,000 persons in the general population, a survey of VA hospitals and other installations showed not one of 11,375 volunteer workers developed the disease after coming on duty.

The survey, covering the period from July 1, 1955, to June 30, 1956, is reported by Dr. Leo V. Schneider, chief of VA Tuberculosis Control.

Science News Letter, November 3, 1956

IN SCIEN

MEDICINE

See Help for Hangovers In One Relaxing Drug

➤ SUCH HANGOVER SYMPTOMS as sleeplessness, the shakes, anxiety and depression are lessened and the time for recovery from intoxication is shortened by treatment with one of the relaxing drugs, meprobamate, Dr. Leon A. Greenberg of Yale University reported at a conference on the drug held at the New York Academy of Sciences.

The drug is sold under the trade names Equanil and Miltown.

Trials on 167 alcoholics showed it "clearly an effective drug" for the less severely disturbed who did not need to be put in a hospital. For the acute patients who had to be sent to a hospital, the drug was useful as an addition to other treatment.

For patients who are worried, anxious and tense after an operation, the drug is effective in helping the patients relax, get a good night's sleep and be willing to get out of bed soon after the operation, Dr. Timothy A. Lamphier of Boston reported.

It was effective as replacement for barbiturates in patients who had been addicted to these for a night's sleep.

Science News Letter, November 3, 1956

PUBLIC HEALTH

Immunity to 600 From Polio Pills

➤ SOME 600 PERSONS have had "full immunity" to polio for the past five years as a result of taking pills of attenuated, or weakened, but living polio virus.

These results were announced in a "progress report" by Drs. Herald R. Cox and Hilary Koprowski of Lederle Laboratories, Pearl River, N. Y., where the vaccine pills are made.

Included in those protected are persons of all ages from five days to 50 years.

Although the virus they swallowed in pills or in juice or milk was alive, it was so weakened it did not cause any paralytic disease in any of the 600. It had been weakened by passing for several generations through mice, chick embroyos and monkey kidney tissue.

This virus vaccine is taken in three doses, one for each strain of polio virus. The vaccine is, of course, not the same as the Salk polio vaccine, which is made from killed polio virus, nor is it the same as the attenuated but live virus developed and being tested by Dr. Albert B. Sabin of Cincinnati.

The Cox-Koprowski polio vaccine was tested in humans by Dr. Joseph Stokes Jr. of Philadelphia and Dr. Karl Meyer of San Francisco.

Science News Letter, November 3, 1956

CE FIELDS

ARCHAEOLOGY

Debris of Party Found In King Nestor's Palace

➤ EVIDENCE of a big party has been found by University of Cincinnati archaeologists in the great King Nestor's 31-century-old palace near Pylos, Greece.

In one room, the scientists uncovered 2,853 broken drinking cups. It was probably the custom on such occasions, the University scientists surmise, to drain the cup and then to shatter it by hurling it to the floor. King Nestor, they also deduce, was a practical man: the cups were simply and cheaply made for just that purpose. The number was found by counting stems.

In other parts of the luxurious palace were found such "modern" improvements as terracotta chimney-pipes to carry off the smoke from the hearth fires and a drain system to carry off the water from baths and possibly a toilet.

A tremendous collection of at least 8,000 pieces of household dishes and crockery presumably belonged to King Nestor's wife, Eurydice.

Eurydice also had very luxurious quarters in the palace, including a boudoir covered with frescoes and with an elaborately ornamented floor.

The University of Cincinnati expedition was led by Dr. Carl W. Blegen, head of the classics department.

King Nestor's palace was a magnificent building of nearly 100 rooms, of which some 46 separate halls, apartments, chambers, passages, stairways and courts have been excavated.

Science News Letter, November 3, 1956

TECHNOLOGY

Electronic "Seeing" Aid Invented by Blind Person

➤ FIFTY BLIND PEOPLE will be testing shortly a new aid for those who cannot see, created by a blind inventor. It is an "audible vision probe" that electronically will help them locate the position of lighted objects.

The new "eye" for the blind is the size of a large fountain pen and its electronic circuit "sees" light. Greater light intensity gives a change in pitch in an earphone.

Invented by Dr. Clifford M. Witcher, himself blind from birth, who died Oct. 6 at the age of 42, it was produced by the Dunn Engineering Associates, Cambridge, Mass., for the American Foundation for the Blind in New York. Dr. Witcher lived to see his instrument produced.

Despite his lack of sight, Dr. Witcher received a Ph.D. from Columbia University and was a Bell Telephone Laboratories research physicist. Since 1946, he worked on sensory aids to the blind at the Haskins Laboratories, the American Foundation and M.I.T.

The new instrument is an elementary electronic eye that converts lights to sound to help blind people locate distant sources of light, such as windows and doors, lighted pointers on electrical apparatus and other contrasts of light and shade.

With the device, a blind secretary can find the letterhead on a sheet of stationery, a blind telephone operator can spot the lights of an incoming call an her switchboard, and a scientist can read especially equipped instruments.

The American Foundation for the Blind will issue the first lot of the instruments on loan in order to evaluate and perfect the probe.

Science News Letter, November 3, 1956

TECHNOLOGY

Radar Antenna Is Balloon Shaped Like Lollipop

➤ A GIANT BALLOON shaped like a lollipop is the latest radar antenna, constructed of fiberglass cloth, towering 30 feet high, and weighing only 1,690 pounds compared with 10,000 pounds of the equivalent metal antenna.

Developed for the Air Force, it won for Coleman J. Miller, an engineer for Westinghouse Electric Corporation, Pittsburgh, a $5,000 patent award.

It can be erected or dismantled in minutes for fast moving to a new location.

Science News Letter, November 3, 1956

SURGERY

Pain-Killer Protects Heart From Jitters

➤ PAIN-KILLER put directly into the heart will protect that organ from a deadly jittering state during frozen sleep anesthesia.

The technique has been developed by Dr. Leo R. Radigan of the National Heart Institute, Bethesda, Md., and in parallel research by Dr. Angelo Riberi at Indiana University, Bloomington, Ind.

More than 40 patients have already benefited from the new technique.

The jittering state is called ventricular fibrillation. When it develops, individual heart muscle fibers act independently instead of all together. As a result the heart cannot pump blood effectively. This may happen when patients are refrigerated, or chilled in an ice bath, to reduce their need for oxygen during heart operations. The chilling procedure, known as hypothermia, is done after the patient has been put under an anesthetic.

The pain-killer used by Drs. Radigan and Riberi to prevent fibrillation at such a time is novocain, familiar as the pain-killer the dentist uses.

Science News Letter, November 3, 1956

PEDIATRICS

Mountain Babies Born Lightweight

➤ THE MEDICAL MYSTERY of the mountain-born babies of Leadville, Colo., was related to the Western Society for Pediatric Research meeting in Salt Lake City by Drs. R. C. Howard, J. A. Lichty and P. D. Bruns of the University of Colorado Medical School.

The mystery concerns why so many Leadville babies are technically premature, that is, weighing five and one-half pounds or less at birth. The number is three times greater in Leadville than in the rest of the country.

The babies are not abnormal, only half to three-quarters of a pound lighter in weight when born. Racial origin, mother's diet, water supply, and social and economic factors have been ruled out as solutions to the mystery.

Leadville's altitude, 10,000 feet, was thought to be the explanation, but latest investigations, financed by Playtex Park Research Institute, show the amount of oxygen in the blood and the number of red blood cells in Leadville babies are not significantly different than in babies born in Denver, at an altitude of 5,000 feet.

The medical mystery is still unsolved.

Science News Letter, November 3, 1956

SURGERY

Create Skulls From Body's Own Ribs

➤ CREATING NEW SKULLS, or large parts of them, from rib bones is being done by plastic surgeons in Cincinnati. Two of them, Drs. Jacob J. Longacre and G. A. deStefano of Christ and Children's Hospitals, reported the method at the American Society of Plastic and Reconstructive Surgery meeting in Miami Beach, Fla.

One of their patients was a two-year-old boy who had almost half of his skull destroyed when a truck backed over him, grinding his head into the crushed stone of a driveway. Working with Dr. Edgar Lotspeich, Cincinnati neurosurgeon, the doctors removed four ribs from the child in four separate operations and used them to cover the skull defect.

The little boy, now almost six, is alert, developing normally and needs no protective covering for his head. The defect is covered with solid bone and the boy's ribs are normal.

The rib grafts in this and other cases form a scaffolding along which new skull bone is built, the doctors explained.

The defect in the chest wall regenerates with new rib in as little as 34 days.

Because the amount of bone available from the ribs is almost unlimited, the Cincinnati doctors recommend looking on the ribs of the chest cage as "a bone bank within each human body."

Science News Letter, November 3, 1956

GENERAL SCIENCE

Talent Search Underway

To find the 40 high school seniors most likely to succeed in science careers, the Sixteenth Annual Science Talent Search is now launched. Closing date is Dec. 27.

➤ A NATION-WIDE search is now under way to find the 40 most promising science-minded high school seniors in the country.

The Sixteenth Annual Science Talent Search was launched with an invitation to seniors in 27,000 public, private and parochial schools throughout continental U.S.A.

They will have the opportunity to compete for a five-day visit to Washington and $11,000 in Westinghouse Science Scholarships. Valuable honorable mention status will go to 260 others. The results of the Search will reveal who among this year's seniors will be the nation's leading scientists of the future, and will stimulate others to undertake scientific training.

The Science Talent Search is conducted by SCIENCE SERVICE and supported by the Westinghouse Educational Foundation. Watson Davis, director of SCIENCE SERVICE, in announcing this year's Search, called attention to the growing shortage of scientists and engineers, a shortage that hampers the nation's industrial and defense programs.

Principals and science teachers in secondary schools throughout the country are now receiving instructions on "How You Can Search for Science Talent." They will learn how to recognize science talent among their students and to encourage those students to enter the Sixteenth Annual Science Talent Search.

Materials Sent Soon

They will send for, and after Nov. 15 receive, about 25,000 sets of entry materials, so qualifying seniors can enter the competition for the trips and $11,000 in scholarships. The thousands of seniors will comply with all requirements for entry in their own schools.

From the 25,000 entries, it is estimated about 4,000 will complete all entry requirements. Of these, 40 will be named as national winners and will receive five-day, all-expense-paid trips to Washington, to attend the Annual Science Talent Institute.

Another 260 will be named for honorable mention. All 300 will be recommended to colleges, universities and technical schools of their own choice.

As in the past, it is expected all will receive offers of financial assistance for college education from other sources on the basis of this honor. Many of the 40 winners of 1956 were offered as much as $30,000 in scholarships.

To comply with entry rules, each contestant must take a two-and-one-half-hour science aptitude examination in his own school, submit personal and scholastic records, and write a report of about 1,000 words on "My Scientific Project." The examination may be taken between Dec. 3 and Dec. 27.

All entries must be in the offices of SCIENCE SERVICE by midnight, Thursday, Dec. 27, when the competition closes.

Winners and honorable mentions will be announced late in January, 1957, and the 40 winners will come to Washington, D. C., from March 7-11, 1957.

After five days of meeting the nation's outstanding scientists, of learning about the latest developments in science and of visiting places of historic and scientific interest, the winners will receive scholarships ranging in size from $100 to $2,800.

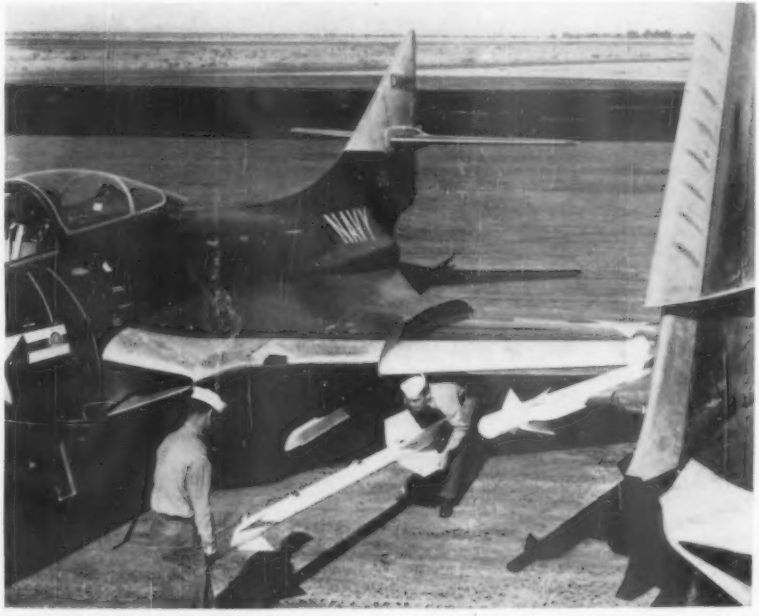
How well the Science Talent Search has been able to replenish the much needed supply of scientists is illustrated by a survey of the present careers of the 600 young men and women (from 15 to 33 years of age) chosen in the first 15 years (1942-56) of the Search: All are in or have attended college. With very few exceptions, they advance to a bachelor's degree, and more than 50% of those old enough already have a doctor's degree.

Colleges Are First Choice

Careers as teachers and researchers in colleges and universities rank first in choice. Industry has taken the second largest number of the winners now working full time. The highest reported salary is more than $13,000. A smaller number are in Government employment. Those self-employed are relatively few—most of them physicians in private practice.

Service in World War II cut in heavily on the time of the winners from 1942-45 and consequently delayed the careers of most of the men in those years. Winners of later years have been fortunate in receiving draft deferments in order to continue their education. Of the men now serving in the armed forces, most are serving in the line of their completed training.

Many of the women who have been named winners in the 15 years of the STS



"SIDEWINDER" MISSILE — A lightweight but deadly air-to-air guided missile is the "Sidewinder," now being produced for the Navy Department by Philco Corporation. The name is derived from the term commonly used in the Southwest for particularly vicious rattlesnakes. Small and light enough to be carried in quantity by single-seat interceptors, the missile may be fired singly or in salvos. It will also be used by the Air Force.

now are married—most of them to scientists or engineers. Homemaking and child care occupy the full time of a good share of these women. The rest combine marriage with their careers.

The judges of the Science Talent Search are Dr. Rex E. Buxton, Washington psychiatrist; Dr. Harold A. Edgerton, vice-president, Richardson, Bellows, Henry and Co., New York City, and Dr. Steuart H. Britt, vice-president and director of research, Needham, Louis and Brorby, Inc., Chicago. The latter two have designed the science aptitude examination for each of the Science Talent Searches.

High School seniors in some states will have a double chance to win scholarships through state Science Talent Searches run concurrently with the national competition and by special arrangement with Science Clubs of America.

In 1957 the following states will hold these competitions: Alabama, Arkansas, Connecticut, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Mexico, North Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia and Wisconsin.

For complete details of the national and state Science Talent Searches, write to Science Clubs of America, 1719 N St., N.W., Washington 6, D. C.

Science News Letter, November 3, 1956

CHEMISTRY

Next: Four New Elements

➤ ELEMENTS up through 105 may be created and identified in the next few years. These elements probably existed at the birth of the earth but, decaying through radioactivity, became extinct within minutes or seconds.

The hopes for recreating, briefly, these extinct "dinosaurs of matter" were described by Dr. Glenn T. Seaborg, the University of California Nobel Laureate who is the co-discoverer of plutonium, element 94, and all the heavier synthetic elements up through 101.

In the G. N. Lewis Memorial Lecture, Dr. Seaborg reported in detail for the first time some of the predicted chemical and radiation properties of undiscovered elements up to and including element 105, as well as how he and his colleagues hope to make them.

Dr. Seaborg said only 17 atoms of element 101 were identified in the discovery experiments. Higher in the periodic table, even fewer atoms can be made and they decay more quickly, reducing chances of identification.

Dr. Seaborg and his colleagues hope to overcome these problems chiefly in two ways:

1. By using an atom smasher called the heavy ion linear accelerator, or "Hilac," built with Atomic Energy Commission funds.

2. By keeping alert for unusual isotopes of the ultra-heavy elements.

With the new atom-smasher, the scientists will hurl the nuclei of atoms as heavy as argon, element 18, at target nuclei. In the past, the usual projectile has been the alpha particle, the nucleus of helium, element 2.

With the bigger projectiles, larger yields of the still undiscovered elements are expected, making identification possible.

Identification of elements through 105 may take five to ten years, Dr. Seaborg said.

In the more distant future, he said, elements from 105 through 108 might be identified by their characteristic radioactivity.

The scientist predicted element 102 will be chemically like ytterbium, element 70; element 103 like lutetium, element 71; element 104 like hafnium, element 72; element 105 like tantalum, element 73; 106 like tungsten, element 74; element 107 like rhenium, element 75; and 108 like osmium, element 76.

Science News Letter, November 3, 1956

How Life Is Handed On

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ELECTRONICS

Univac Given To Harvard University

➤ A TWIN to the giant electronic "brain," the Univac that will forecast this year's election results on the basis of the first scattered returns, has been presented to Harvard University.

The $1,500,000 gift from the Sperry Rand Corporation will be used to spur research in such fields as language study, physics, astronomy and economics. It will join a team of big machines now operating in the Harvard Computation Laboratory.

Science News Letter, October 27, 1956

MEDICINE

Relaxing Drugs Will Cause Great Change

➤ RELAXING, or tranquilizing, drugs will change the mental disease picture in the next ten years as much as the antibiotics, or so-called mold remedies, have changed the germ disease picture in the past 15 years.

This prediction was made by Dr. Felix Marti-Ibanez, medical editor and professor of history of medicine at New York Medical College, Flower and Fifth Avenue Hospitals, New York, at the Fourth Annual Symposium on Antibiotics in Washington.

The symposium is sponsored by the U. S. Food and Drug Administration in collaboration with the journals, *Antibiotics and Chemotherapy* and *Antibiotic Medicine and Clinical Therapy*.

In the years since the first of these symposiums, 43 new antibiotics have been announced, to say nothing of the many others since the discovery of penicillin in 1928 and its first use on patients in 1940.

The field of antibiotics has grown so, Dr. Marti-Ibanez said, that the pharmaceutical industry should set up an International Institute of Antibiotics and should establish "chairs," or professorships, in antibiotic medicine in various countries of the world.

Science News Letter, November 3, 1956

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A McGRAW-HILL BOOK

• Books of the Week •

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ANIMALS ALL—Peter Skelton, Ed., with foreword by "Elephant" Bill Williams—*John Day*, 253 p., illus., $3.75. A collection of animal stories by well-known authors selected as depicting accurately animal life and as having an animal as the true hero.

ARCTIC FRONTIERS: United States Explorations in the Far North—John Edwards Caswell—*University of Oklahoma Press*, 232 p., illus., $3.75. Covering the period of exploration in the Arctic from 1850-1909.

BIBLIOGRAPHY OF BOOKS FOR CHILDREN—Christine B. Gilbert, Compiler—*Association for Childhood Education International*, 1956 ed., 130 p., paper, $1.50. A guide to reading for children aged four through 12. Indexed by title and author, as well as subject.

CONCISE ANATOMY—Linden F. Edwards—*McGraw-Hill*, 2d ed., 502 p., illus., $7.50. Most of the material remains essentially unchanged in this edition, but principles of applied anatomy have been added at the end of many chapters.

CRUSTACEAN METAMORPHOSES—R. E. Snodgrass—*Smithsonian*, Miscellaneous Collections, Volume 131, Number 10, 78 p., illus., paper, 80 cents. Unlike insects, most crustacea hatch at an early stage of embryonic development, when they have only a few body segments and corresponding appendages. They successively add new ones until the definitive number is attained.

DESIGN IN CIVIL ARCHITECTURE: Elevational Treatments—Sir Albert Richardson and Hector O. Corfiato—*Philosophical Library*, 216 p., illus., $15.00. A selection of famous elevations with comments in English, French and Russian.

DISEASES OF THE BREAST—C. D. Haagensen—*Saunders*, 751 p., illus., $16.00. Based on the author's experience for 25 years as a specialist in this field.

EDUCATING SPASTIC CHILDREN: The Education and Guidance of the Cerebral Palsied—F. Eleanor Schonell—*Philosophical Library*, 242 p., illus., $6.00. Based on work and experience in five English-speaking countries over the past ten years. Written as much for the parent as for the specialist.

ESSENTIALS OF HISTOLOGY—Margaret M. Hoskins and Gerrit Bevelander—*Mosby*, 3d ed., 254 p., illus., $4.00. Presenting important morphological characteristics of tissues and organs for use in beginning courses in histology.

THE FIRST BOOK OF SURPRISING FACTS—Frances N. Chrystie—*Franklin Watts*, illus. with drawings by Don Phillips, $1.95. Important and useful information for children.

FUN WITH FIGURES—J. A. H. Hunter—*Oxford University Press*, 160 p., $3.00. A collection of amusing puzzles involving figures. A complete set of answers is included as are also fifteen typical solutions.

THE FUTURE OF ARID LANDS: Papers and Recommendations from the International Arid Lands Meetings—Gilbert F. White, Ed.—*American Association for the Advancement of Science*, 453 p., illus., $6.75. Areas of meager and undependable rainfall and of sparse vegetation, commonly called "arid," account for roughly one-third of the land surface of the globe.

INTRODUCTION TO SOLID STATE PHYSICS—Charles Kittel—*Wiley*, 2d ed., 617 p., illus., $12.00 Intended for students and young scientists and engineers as well as working scientists who have not had modern physics courses.

THE MAMMALS OF SHENANDOAH NATIONAL PARK—Richard H. Manville—*Shenandoah Natural History Association*, Bulletin No. Two, 69 p., illus., paper, $1.00. Here the spotted skunk and harvest mouse reach nearly their northernmost limits, and the woodland jumping mouse and masked shrew are close to their southernmost extent.

MISSILES AND ROCKETS: Magazine of World Astronautics, Vol. 1, No. 1—Robert H. Wood, Editorial Director—*American Aviation Publications*, monthly, 150 p., illus., paper, $8.00 per year. A news and feature periodical geared to the growing industrial, government and scientific requirements of what is today a complete new industry.

NUCLEAR METALLURGY: Vol. III—George H. Vineyard, Donald E. Thomas and Douglas S. Billington — *American Institute of Mining, Metallurgical and Petroleum Engineers*, IMD Special Report Series No. 3, 54 p., illus., paper, $3.75. Compilation of papers presented at a symposium on nuclear metallurgy in October, 1956.

PARKING AND BUYING HABITS OF A STORE'S CUSTOMERS — Laurence C. Pendley — *Highway Research Board*, Special Report 11-C, 18 p., illus., paper, 60 cents. Auto-driving customers account for the major portion of sales in all departments. Supplement to "Parking as a Factor in Business."

PARKING AND ITS RELATIONSHIPS TO BUSINESS: Summary Report of Project—J. T. Stegmaier—*Highway Research Board*, Special Report 11-D, 16 p., illus., paper, 60 cents. Parking facilities were found to have an important effect on where people shop and how much they spend.

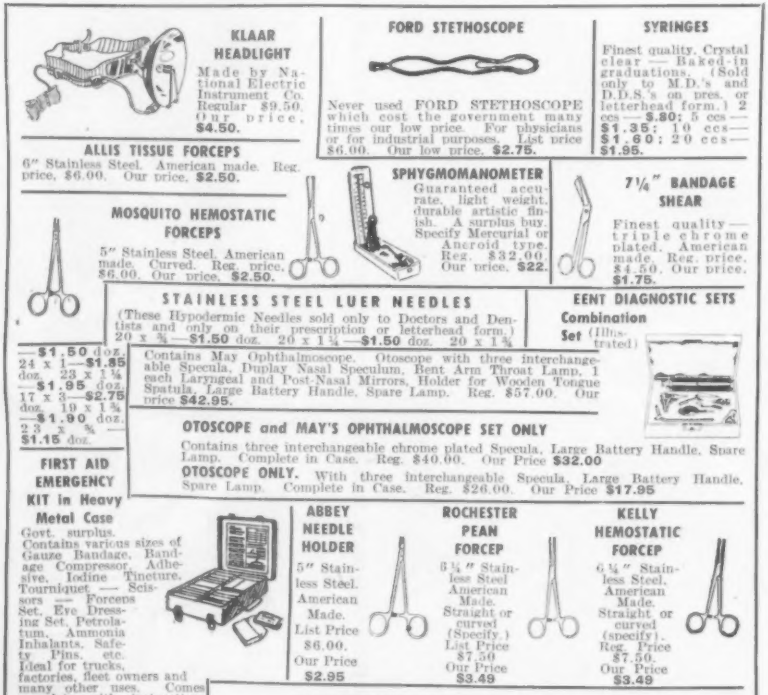
PHILOSOPHY OF SCIENCE: Part One, Science in General—P. Henry van Laer in collaboration with Henry J. Koren—*Duquesne University*, 164 p., cloth $3.75, paper $3.00. Exploring the meaning of science in general and the various general problems regarding science, such as abstraction, method, theory and demonstration.

PHYSICS FOR EVERYBODY—Germaine and Arthur Beiser with foreword by Henry A. Barton—*Dutton*, 191 p., illus., $3.50. A lot of fun, Dr. Barton says, and a lot of stimulation and some real mental sharpening can be found in physics without knowing any mathematics beyond arithmetic and the very simplest concepts of algebra.

POLYMER SOLUTIONS—H. Tompa—*Academic*, 325 p., illus., $8.50. Dealing essentially with the thermodynamics and the viscosity of polymer solutions.

PROCEEDINGS OF THE CONFERENCE ON INSTRUMENTATION AND CONTROL IN THE PROCESS INDUSTRIES—E. A. Roberts, Chairman—*Electrical Engineering Department, Armour Research Foundation*, 108 p., illus., paper, 3.00. Record of a conference held January 25-26, 1956.

PROGRESS REPORT ON ATOMIC ENERGY RESEARCH: Hearings Before the Subcommittee on Research and Development of the Joint Committee on Atomic Energy, Congress of the United States—Melvin Price, Chairman—*Govt. Printing Office*, 375 p., illus., paper, $1.00. The most comprehensive current report on the subject available. The experts have poured into this record many facts and illustrations.



RESEARCH IS PEOPLE: A Discussion of the Recruitment, Motivation, Recognition, Rating and Evaluation of Research Personnel—J. H. Perrine and others—*Industrial Research Institute (New York University Press)*, 69 p., illus., paper, $4.00. Discussion of the problems related to personnel engaged in research. Proceedings of a symposium held in April, 1956.

SCORPIONS—Herbert L. Stahnke—*Arizona State College*, Poisonous Animals Research Laboratory, 36 p., illus., paper, 50 cents. Contrary to common belief, scorpions are not confined to subtropical and tropical climates, but in the United States they are more than a minor nuisance only in Arizona and parts of California. Visitors there are warned not to walk barefoot after dark and to shake their shoes before putting them on.

SLOPES OF THE SEA SURFACE DEDUCED FROM PHOTOGRAPHS OF SUN GLITTER—Charles Cox and Walter Munk—*University of California Press*, 79 p., illus., paper, $1.75. Describing a method applied to aerial photographs taken near the Hawaiian Islands.

SPECTROSCOPY AT RADIO AND MICROWAVE FREQUENCIES—D. J. E. Ingram—*Philosophical Library*, 332 p., illus., $15.00. For those who wish to apply the techniques in their own field of study.

THERMODYNAMIC TABLES AND OTHER DATA—R. W. Haywood, Ed.—*Cambridge University Press*, 23 p., paper, 50 cents. Useful information for physicists and engineers.

Science News Letter, November 3, 1956

FORENSIC MEDICINE

Sex Identity Test To Aid Criminology

➤ A TEST for telling the sex of an unborn baby or for determining sex in doubtful cases can be used to help solve criminal problems.

The test depends on the presence of sex chromatin in the nucleus of female cells.

The sex chromatin persists in the cells after death. From it scientists can in certain circumstances identify the sex of small fragments of mutilated tissue, of material sticking to instruments and of human hair, Drs. A. D. Dixon and J. B. D. Torr of the University of Manchester, England, report in *Nature* (Oct. 13).

Even when a body has been buried in direct contact under two feet of soil, its sex can be identified with certainty as long as four weeks later by examination of the cell nuclei.

Science News Letter, November 3, 1956

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PUBLIC HEALTH

Test Detects Nerve Gas

Chemicals, now part of Army Chemical Corps testing kits, used to detect very small amounts of nerve gases in water. Fish can also be used to spot Sarin and Tabun.

➤ VERY SMALL AMOUNTS of lethal nerve gases in public water supplies can be rapidly detected by a test announced by Joseph Epstein of the Army Chemical Center, Md., in *Public Health Reports* (Oct.). Mr. Epstein is chief of the sanitary chemistry branch, biochemical research division, Chemical Warfare Laboratories.

The test is chemical, but one nerve gas, Tabun, can be detected by its fruity odor, and both it and another nerve gas, Sarin, can also be detected by tests with small fish.

Many chemicals that are poisonous when inhaled, such as hydrogen cyanide and cyanogen chloride, are so rapidly broken down by hydrolysis in water that it would take enormous amounts, one ton in a 10,000,000-gallon reservoir, to make the water dangerous for drinking, Mr. Epstein points out.

Nerve gases, on the other hand, would be poisonous if water containing very small concentrations were drunk.

The average man could safely drink water containing 25 parts per million of hydrogen cyanide for a week if he drank normal amounts of water daily. However, for one nerve gas, Sarin, the safety level, or "tolerance," has been set at five-tenths of a part per million for a person drinking no more than five quarts daily for three days.

Tabun, another nerve gas, is about one-fourth as poisonous as Sarin when swallowed.

The lethal amounts of either gas, however, are small enough so that contamination of water supplies is probable in case of chemical warfare.

The test Mr. Epstein and associates have developed will detect as little as one-tenth of a part per million of Sarin in water, that is, one-fifth of the concentration set as safe to drink in normal amounts for three days.

The method of testing for both Sarin and Tabun in the presence of their hydrolysis products depends on their reaction with either benzidine or o-tolidine and alkaline peroxide solutions. The test is included now in Chemical Corps water-testing kits.

The fish tests might be useful in some cases for detecting small concentrations of the gases in water. Green sunfish, fathead minnows or goldfish could be used.

The concentration of each of the gases that will kill half of each of the test fish in 10, 15 and 20 minutes has been worked out. Half of the goldfish, for example, will be killed in ten minutes by thirty-five-hundredths part per million of Sarin in water.

Simple decontamination methods will rapidly destroy both Sarin and Tabun once detected in water supplies.

Science News Letter, November 3, 1956

GENERAL SCIENCE

Teachers Offered Aid For Summer Research

➤ TEACHERS in high schools and colleges who would like to undertake research in chemistry during the summer of 1957 are being offered the chance of a grant from the National Science Foundation if requests are made by Dec. 1.

Science News Letter, November 3, 1956

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Questions

CHEMISTRY—How is it hoped to create four new elements? p. 283.

□ □ □

MEDICINE — What is the effect of one tranquilizer on the reproductive cycle? p. 277. What are the early signs of artery disease? p. 279.

□ □ □

PSYCHOLOGY—What is suspected as one cause of infertility in women? p. 279.

□ □ □

PUBLIC HEALTH—How large is the threat of tuberculosis to Veterans Administration hospital volunteers? p. 280.

□ □ □

SURGERY—How long does it take to grow a new rib? p. 281.

□ □ □

PHOTOGRAPHS: Cover General Electric Company; p. 277, U. S. Navy; p. 278, U. S. Army; p. 279, Armour Research Foundation; p. 282, Philco Corporation; p. 288, ? ? ?

BIOLOGY

Sees Sex Ratio Control Through Blood Acidity

➤ A PRACTICAL WAY of getting more boy than girl babies, or at least more male than female cattle, could come through testing and if necessary changing the acidity of the blood of the sire, Dr. K. G. McWhirter of Oxford University suggests in *Nature* (Oct. 20).

It depends on a previous report that in mice the males with somewhat acid blood had an excess of females in their offspring, while those with somewhat more alkaline blood had an excess of males in their offspring.

Mammals other than mice may also produce more males or more females according to the acidity or alkalinity of the blood of the male parents, it appears from other studies.

"Athletic men" have a tendency to produce more daughters, one report has shown, and athletic exertion reduces blood alkalinity, at least temporarily. Diet and high altitude have also been shown to be factors affecting blood acidity or alkalinity.

From all these points, Dr. McWhirter concludes that "a practical system of controlling sex ratio in economically important animals might be set up."

He suggests doing this by selecting sires for the appropriate acid or alkaline blood tendency or by altering the blood in the desired direction by drugs, diet or an artificial atmosphere of the desired oxygen level.

MEDICINE

Can Drive Tranquilized

➤ AT LEAST ONE of the relaxing or tranquilizing drugs can be safely taken by persons driving a motor vehicle or doing other things requiring accuracy, judgment, steadiness and quick eyesight.

Drinking drivers, however, will be just as dangerous whether taking the drug or not.

Tests showing this were reported by Drs. Donald G. Marquis, Ralph W. Gerard, E. Lowell Kelly, James G. Miller and Anatol Rapoport of the University of Michigan, Ann Arbor, at a conference at the New York Academy of Sciences.

The tranquilizer they tested is meprobamate, sold under the trade names Equanil and Miltown. Although only on the market since April, 1955, some eight million doses are being prescribed every month. One out of every 20 Americans, it is estimated, got the drug within the last 30 days.

Yet the Michigan study is, so far as is known, the only one made of any tranquilizer on its effects on normal persons with relation to the activities of everyday life.

Meprobamate actually is a muscle-relaxing drug. How much effect it has in tranquilizing, or relieving anxiety, is open to question in the opinion of the Michigan researchers.

They compared the effects of this drug, an identical looking capsule of a dummy, or placebo, material, two ounces of whisky, and the drug plus two ounces of whisky. The 50 normal persons tested did not know whether they were getting the drug or the dummy capsule.

One day they got one, one day another, one day whisky alone and another day whisky plus meprobamate.

After each, the normal persons were tested on a driver trainer, with an instrument to test visual acuity, depth perception and visual balance, and for motor steadiness as shown by how they could hold a metal stylus in a series of holes of decreasing size without touching the sides of the holes with the stylus.

No significant difference was found in skills or performance between tests with meprobamate and tests with the dummy capsule. The whisky definitely made driving performance worse, but alcohol with meprobamate had the same effect as alcohol alone.

Science News Letter, November 3, 1956

Rice wax, now an unused waste product of rice-oil production, can replace imported carnauba and other hard waxes used in polishes, carbon paper, and shoe stains.

Bulgaria became the 75th member state of UNESCO in 1956.

Do You Know?

Whooping cranes are great white birds about five feet tall, with red-crowned heads, black-tipped wings and a wingspread of seven feet.

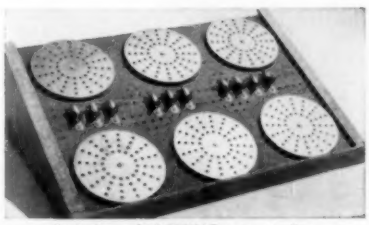
The annual catch of *fish* varies from year to year but approximates 4,500,000,000 pounds.

More money is spent in America for *grass* on lawns, parks, cemeteries, golf courses, etc., than for any other single crop.

Ten different species of disease-carrying *insects* have now developed immunity to insecticides normally used to exterminate them.

A dental expert has developed a new X-ray technique for producing clear *fingerprints* from the charred hands of fire victims.

Can you think faster than this Machine?



Control panel of GENIAC set up to do a problem in space ship engineering

Be careful before you answer. GENIAC, the first electrical brain construction kit, is equipped to play tic-tac-toe, cipher and encipher codes, convert from binary to decimal, reason in syllogisms, as well as add, subtract, multiply and divide. Specific problems in a variety of fields—actuarial, policy claim settlement, physics, etc., can be set up and solved with the components. Connections are solderless and are completely explained with templates in the manual. This covers 33 circuits and shows how new ones can be designed.

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CAR RACKS are small blocks of neoprene rubber. Mounted on top of the roof to hold fishing rods, the blocks are held in place by strong permanent magnets on their undersides. The carriers can be rolled off the roof or left on the car indefinitely without harm from sun and rain. Tie-down cords hold the rods in place.

Science News Letter, November 3, 1956

SCRAPING RODS for removing paint, grime and rust from corners and grooved or rounded surfaces has 26 flexible prongs of spring steel. Permanently imbedded in a wooden handle, the prongs permit the scraper to be pulled over flat or irregular contours with only a small amount of pressure.

Science News Letter, November 3, 1956

CHEMICAL CARRIER replaces the wooden crate of the past. Made of welded steel rod construction and epoxy-phenolic coating, the carrier is designed to carry a 13-gallon puncture-proof polyethylene bottle. Together, the carrier and bottle weigh 60% less than glass carboys and wooden crates the same size.

Science News Letter, November 3, 1956

TONE ARM KIT is designed for the do-it-yourself high fidelity fan. The kit consists of three basic parts and springs are not used in any part of the arm structure.

The arm for self-assembly is available in 12-inch or 16-inch lengths.

Science News Letter, November 3, 1956

EXPANDABLE HAMPER, shown in the photograph, holds more than four bushels of laundry. Made of heavy-duty, industrial-type elastic, the hamper can be attached to the ceiling or joists of the basement, or to the end of a laundry chute. Washable, the empty webbing-hamper is 22 by 26 by 9 inches.

Science News Letter, November 3, 1956

HIGH-SPEED SCALE is designed to reduce normal precision weighing time by 50%. A product of the Netherlands, the laboratory tool is equipped with liquid damping for rapid balance. The instrument has sliding counterweights on two horizontal tare bars with a capacity of 0 to 50 and 0 to 500 grams.

Science News Letter, November 3, 1956

TRAVEL DESK can be used in the car for making notes, records or holding maps. The six-and-one-quarter-inch by ten-inch metal clip board is placed under the dash and can be swung out for use. Four leveling screws keep the desk flat. A pad and magnetic pencil are included with the car desk.

Science News Letter, November 3, 1956

TANK BALL ATTACHMENT has a rubber tube that releases air so the ball drops after releasing enough water. A water-saving device, the toilet tank ball can be installed in five minutes and is described as preventing flooding of septic tanks.

Science News Letter, November 3, 1956

Nature Ramblings

By HORACE LOFTIN

Why Watch Birds?

➤ THERE IS, according to Walt Kelly, deep in the heart of the Okeefenokee Swamp, an organization of bird lovers—the Audible Boy Bird Watchers. Its acting president is the versatile opossum, Pogo.

Cartoonists and comics find it hard to resist making a bit of fun at the expense of the bird watchers. Indeed, the antics of the bird watching fraternity excite the curiosity and tickle the ribs of the non-bird watching world. What compelling power, they wonder, makes this group rise before dawn on a frigid winter morning to look through frost-covered glasses at "dickey birds?"

Like fishermen, bird watchers are born, not made. It may take most of a lifetime for a person to learn he is a bird watcher, but thereafter he takes to the field, glasses in hand and a gleam in his eye.

Actually, in the majority of cases it is not love of birds, but love of the out-of-doors, that makes a person take up the strange role of bird watcher. The birds furnish the excuse some of us need to break away from the city's brick and concrete for a day of "idleness" close to trees and earth and wild things.

And what better excuse is there than to become familiar with the ever-changing bird life of an area? Skill in identification of the birds—coming only with arduous practice—furnishes challenge. Hunting new or rare species, early or late records, on your birding ground awakens the competitive spirit. Learning the habits of the different birds rewards the curious.

Then there are the beauty and mystery of the birds themselves. Probably no other wild creatures are so satisfying to man's sense of the beautiful as the birds. They sparkle in song, flight, color. The age-old riddle of migration which is made vivid by field work lends itself to the speculative mind.

After the spell of bird watching has taken hold of a person, he still laughs along with the others to the old jokes about "double breasted seersuckers" and the like, but on his day off you will find him where the birding is best.

Science News Letter, November 3, 1956